A.2.1 High Energy Astrophysics Program

1. Scope of Program

This program element solicits basic research proposals to conduct investigations that are relevant to the NASA High Energy Astrophysics (HEA) Supporting Research and Technology (SR&T) Program. The primary goal of the HEA SR&T program is to obtain a better understanding of astrophysical objects (excluding the Sun) and phenomena as revealed through their high energy radiation characteristics. The HEA program comprises the fields of x-ray and gamma-ray astronomy, which correspond operationally to photon energies in the approximate range of 0.1 keV to 100 GeV.

The purpose of the HEA SR&T program is to provide support for the HEA flight program in the disciplines of x- and gamma-ray astronomy. In the context of this program, x-rays are defined as photons in the approximate energy range 0.1-30 keV, while gamma-rays are considered to lie in the energy range 30 keV-100 GeV. The HEA SR&T program provides support for basic research relevant to the design and development of instrumental concepts for future NASA HEA missions and the conduct of scientific investigations via exposure of instrumentation carried on sounding rockets and high-altitude balloons. Proposed research may include ground-based observations of phenomena defined primarily by their high-energy characteristics, provided that such studies pertain directly to NASA HEA space missions. **However, proposals for laboratory astrophysics investigations relevant to High Energy Astrophysics are no longer solicited under this Program Element; such investigations are now solicited under the Program Element entitled 'Space Astrophysics Research and Analysis**

Note that while the scientific and technical merit of the proposed research is the primary selection criterion, relevance to NASAš HEA flight program is of nearly equal weight and must be explicitly described in the proposal. A list of relevant past, present and future HEA missions is given in Tables I and II below in this Section, which are furnished only as a guide to assessing relevance of proposals for this program element.

Note: Theoretical investigations that are generally relevant to this science area are solicited separately under the Astrophysical Theory Program (Section A.2.6 of this Appendix), and projects directed mainly toward the analysis of archival data are covered under the Astrophysics Data Program (Section A.2.4). Investigations that fall into either of these categories are not within the scope of the HEA SR&T program.

Table I - NASA X-ray Astronomy Missions Relevant to the HEA SR&T Program

MISSION	PRIMARY EMPHASIS
Broad Band X-ray Telescope (Astro/BBXRT)	Nondispersive spectroscopic observations of selected cosmic x-ray sources
Diffuse X-ray Spectrometer (DXS)	Spectroscopic observations of the soft x-ray diffuse background
Roentgen Satellite* (ROSAT)	All-sky x-ray/EUV survey and imaging observations of selected cosmic x-ray sources
Asuka (ASCA, formerly ASTRO-D)*	Spatially-resolved spectroscopic observations of selected cosmic x-ray sources
X-ray Timing Explorer (XTE)	Spectrophotometric observations of selected cosmic x-ray sources
Advanced X-ray Astrophysics Facility (AXAF)	High-resolution imaging/spectroscopic observations of selected cosmic x-ray sources
Spectrum-X-Gamma*	High-throughput, moderate-resolution imaging spectroscopic and polarimetric observations of selected cosmic x-ray sources
X-ray Multi-Mirror Mission* (XMM)	High-throughput, moderate-resolution imaging/spectroscopic observations of selected cosmic x-ray sources
ASTRO-E*	Spatially-resolved high-resolution spectroscopic observations of selected cosmic x-ray sources
Constellation X	High throughput, high resolution spectroscopic observations of selected cosmic x-ray sources

* International Collaboration

Table II - NASA Gamma-ray Astronomy Missions Relevant to the HEA SR&T Program

MISSION	PRIMARY EMPHASIS
Compton Gamma-Ray Observatory (GRO)	All-sky wide-band gamma-ray survey
Global Geospace Program (GGS [Wind/TGRS/Konus])	Gamma-ray burst spectroscopy
High-Energy Transient Experiment (HETE-II)	Gamma-ray burst position determination
INTEGRAL*	High-resolution gamma-ray spectroscopy
GLAST	High-throughput, high energy gamma-ray imaging/spectroscopic observations of selected cosmic gamma-ray sources

* International Collaboration

2. Programmatic Considerations

Proposals for investigations under the HEA SR&T program are solicited on a three year cycle, with the last solicitation in 1995. Therefore, proposals for participation in the HEA SR&T Program are solicited by this ROSS-99 NRA. It is anticipated that roughly $9M will be available in FY 2000 for the funding of about 30-40 new three year projects, with modest increases above this level in FY 2001 and 2002. The schedule (due dates for Notices of Intent to propose and the proposals themselves) is provided in Table 1 of the cover letter of this NRA.

NOTE: Appendix C contains critical information necessary for the preparation and submission of proposals submitted in response to this NRA. In particular, Section C.5.3 contains detailed standards concerning the format, page limits, and contents of a proposal. The submission of a proposal not in compliance with these standards may complicate and/or hinder its efficient and complete evaluation. Therefore, deficiencies in format and/or omission of key information may result in a proposal being found unacceptable for evaluation, or if evaluated, being adversely affected during the evaluation process.

The World Wide Web site for submitting both the NOI and the *Cover Page/Proposal Summary* (see Appendix C.5.3) is <http://props.oss.hq.nasa.gov>; proposers without access to the Web or who experience difficulty in using this site may contact Ms. Debra Tripp (E-mail: deb.tripp@hq.nasa.gov) for assistance. Hard copies of the proposals are to be delivered to:

ROSS-99 NASA Research Announcement
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